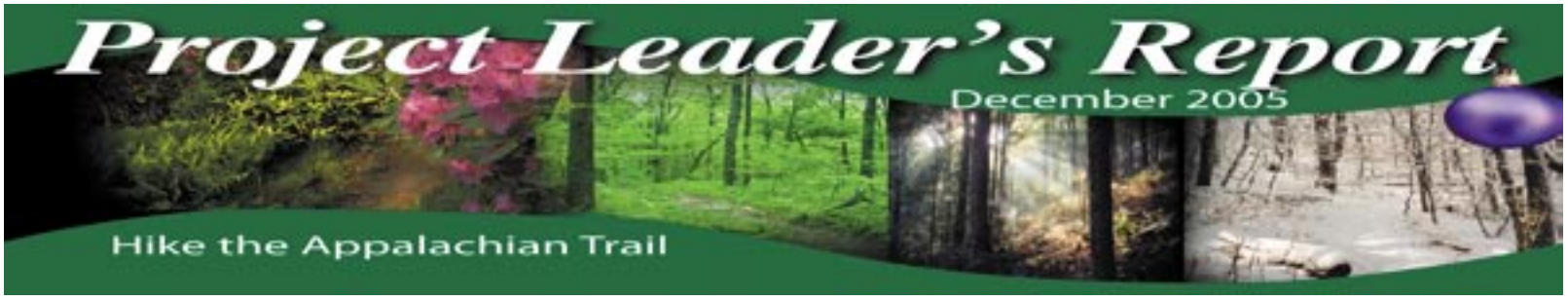
Project Leader's Report

December 2005



USDA Forest Service - Southern Research Station - 320 Green Street, Athens GA 30602 - http://www.srs.fs.usda.gov/disturbance

DISTURBANCE AND MANAGEMENT OF SOUTHERN ECOSYSTEMS

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Outreach Activities:

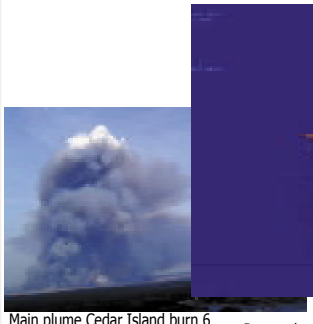
• Five organized groups totaling 32 people visited the Brender Demonstration Forest in December, including the Audubon Society, the Pritchard Family, the Melville Family group from Juliette, and local landowners. A total of 41 people came by the office for information and 76 people hiked the Hitchiti Interpretive Trail. Visitors came from as far away as Texas.

The Hitchiti Interpretive Trail receives considerable use from local residents and visitors.

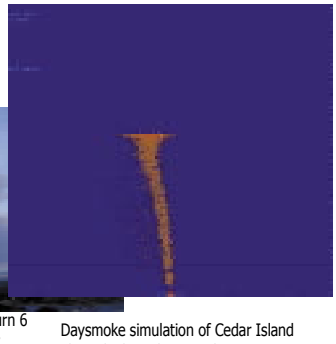
Technology Transfer:

• Ken Outcalt gave an invited presentation to the South Florida Interagency Fire Management Council at their meeting in Moore Haven on "Fire and Fuels Treatments in Pine Flatwoods."

• Gary Achtemeier was an invited speaker at the first Georgia Air Policy Symposium hosted by the Georgia Environmental Protection Division at Atlanta. The purpose of the meeting was to bring together agencies in Georgia involved in air quality research. The title of the talk was "Modeling Source Particulate Matter from Prescribed Burns." The talk summarized past and current applied smoke research of the Smoke Management Team. Approximately 130 were in attendance.



Main plume Cedar Island burn 6 April 2005 looking generally north. 4934 acres. ~1300 LST



Daysmoke simulation of Cedar Island plume looking downwind at ~1300 LST. Altitude of both plumes is about 12,000 feet.

• Alex Clark attended the Wood Quality Consortium Fall Meeting held at the University of Georgia in Athens. Alex, a co-director of the Consortium, made two presentations at the meeting; one on modeling loblolly pine stand MOE (modulus of elasticity) and a second talk on the effect of initial spacing on knot size in loblolly pine. The WQC has completed a five-year contract period and is starting its second five years with nine companies interested in continuing the Consortium.

• Alex attended the TIPP3 Review Meeting held at the University of Georgia. Alex made a presentation on the progress of the research made by the Wood Quality Team on clonal variation in wood properties of loblolly pine, a study partially funded by TIPP3, which is a funding program of the State of Georgia focused on traditional industries such as pulp and paper. This funding comes to the unit through the Wood Quality Consortium and the University of Georgia.

• The unit produced a disk with individual .pdf files of all the papers published in the proceedings of the Biennial Southern Silvicultural Research Conferences to date. The disk is searchable and contains a complete bibliographic database in Endnote. A limited number of copies are available.

Meetings/Reports:

• Mac Callaham and John Stanturf attended a meeting in Stoneville, Mississippi of the Sharkey Restoration Site collaborators. The study is now over 10 years old, and it's time to harvest the cottonwood overstory in the interplanted treatment. The group decided to harvest the treatment next summer, and developed a plan for pre- and post-treatment measurements. John and Mac took Erik Schilling, new staffer with NCASI, on a tour of the study.

The cottonwood fertigation study at Stoneville, MS suffered damage from the sustained high winds there as the aftermath of Hurricane Katrina moved northward. Besides some top breakage and windthrow, trees on the outside of the stand had leaves abraded away.

• John Stanturf and Lynne Breland hosted a conference call of the planning committee of the Biennial Southern Silvicultural Research Conference. The group discussed the change of location to the Classic Center in Athens, made assignments, and planned the first call for papers to come out in January.

Check SHRMC website site for lastest for MM5 forecast http://shrmc.ggy.uga.edu/

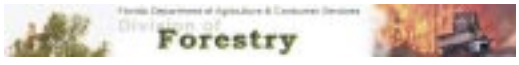
• Gary Achtemeier and Scott Goodrick attended the FCAMMS director's meeting in Denver, CO to provide updates on the status of the Southern High Resolution Modeling Consortium as well as its ongoing projects, the Southern Smoke Simulation System and an interactive GIS-enabled internet tool for displaying FCAMMS products. Directors of the FCAMMS met with the Core Fire Science Team to provide a summary of Smoke Management Team research programs as they relate to the Core Fire Science Portfolio. The FCAMMS Directors also laid out a plan to standardize FCAMMS products for national application.

Meetings/Reports:

• Scott Goodrick attended the first meeting of the Core Fire Science Portfolio Team in Denver, CO. The team worked to both refine the definition of "core" fire science and try to establish potential long-range research goals that should be priorities for core fire science. These goals included development of a new physics-based fire model, development of a global fire danger rating system based on knowledge gained from the physical fire model, and improving our understanding of fire behavior at multiple spatial and temporal scales.

• John Stanturf, Tom Waldrop, and Scott Goodrick will attend a "kick-off" meeting for the cross-station Portfolio Teams designated for the Wildland Fire and Fuels R&D Strategic Program Area (SPA). This meeting offers an opportunity for the Washington Office SPA Leads (Sue Conrad, Mike Hilbruner, and Al Riebau) to brief all the teams, and to give the teams a chance to start their discussions and deliberations. The meeting will be held in Washington, DC the week of January 9th.

Partnerships:



• The Southern Research Station and SRS-4104 finalized a Memorandum of Understanding with the Florida Division of Forestry that will allow the FLDOF to provide their data on prescribed burning authorizations to Scott Goodrick and Yong-Qiang Liu. These data will be used to develop a prototype system for estimating the regional air quality impacts of prescribed burning in a near real-time environment.

• Scott Goodrick will cooperate with Brian Potter of North Central Research Station and Sharon Zhong and Craig Clements at the University of Houston in a field experiment to obtain heat moisture and momentum fluxes from a prescribed prairie fire. These fluxes will be used as validation data for prairie fires simulated using Los Alamos National Laboratory's Firetec model.

Partnerships:

• Kyle Wehner, a graduate student in the Department of Forestry at Michigan State University in East Lansing, MI visited with the Wood Quality Team. Kyle is conducting research on the specific gravity of white spruce (Picea glauca) growing in Michigan. After receiving instruction on using the densitometer, Kyle used the machine to determine the annual ring growth and specific gravity of stem wood samples of white spruce sampled from different regions of Michigan.

• Scott Goodrick visited Mike Fajardo of the Rocky Mountain FCAMMS to assist in deploying a new GIS-based tool for displaying weather and smoke forecasts produced by MM5 and BlueSky that was developed by Scott and the Smoke Management Team.

Smoke dispersion from active fires can be viewed at http://www.fs.fed.us/rmc/index.html

Funding:

• Scott Goodrick submitted a pre-proposal to Joint Fire Sciences for a "Fire Model Inter-comparison Project" that seeks to develop a testing framework for fire behavior models, particularly physics-based coupled fire-atmosphere models such as Los Alamos National Labs' FIRETEC model and the WFDS model of the National Institute of Standards. The project is seeking $681,000 over the next three years for field and modeling work.

• Tom Waldrop submitted a pre-proposal to JFSP for "Low-Intensity Fires May Be Adequate For Stand Replacement Of Table Mountain/ Pitch Pine Stands in the Southern Appalachian Mountains; other investigators include Ralph E. J. Boerner, Professor, The Ohio State University, Steven N. Jeffers, Professor, Clemson University, and Daniel A. Yaussy, Project Leader, Northern Research Station. Total requested for the three-year study is $394,047.

Funding:

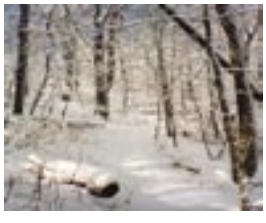
•Yong-Qiang Liu submitted a proposal to JFSP for "Data Development and Analysis of Southern Natural Fire Regimes." The proposed work would (1) derive daily fire information on non-federal lands in the South using satellite remote sensing; (2) analyze current fire regimes using the expanded BLM dataset; and (3) project future fire regimes. Co-PIs are John Qu, George Mason University, and John Stanturf. Total requested for the three-year study is $340,168.

• Yong Liu was co-PI of a proposal entitled "Real-time Fuel Moisture and Fire Danger Mapping in the Eastern States Using Satellite Remote Sensing Measurements" submitted to JFSP by George Mason University. This proposal seeks to estimate real-time fuel moisture using MODIS measurements, estimate real-time fire danger indices using the fuel moisture and other fuel properties (type and loading) retrieved from MODIS measurements, validate the MODIS results using fuel moisture and fire danger indices calculated based on meteorological data, and map real-time fuel moisture and fire danger indices over the eastern state regions.

Personnel News:

• Congratulations to Tim Giddens, Athens, on his promotion to Electronic Technician, GS-0856-12. It's been a longtime a'comin'.

Photos from Masthead: What hikers would see on Appalachian trail.



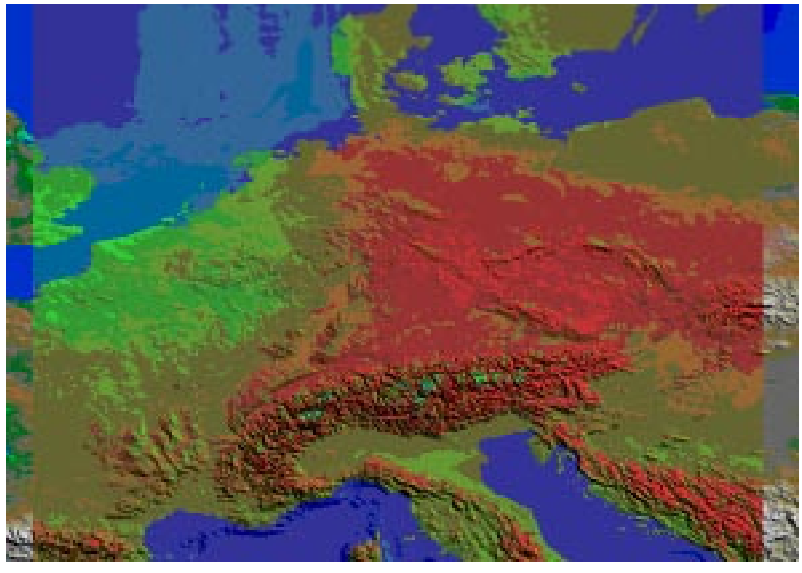
Science Highlight - Artificial Neural Networks :

Artificial Neural Networks—Scott Goodrick, Research Meteorologist

Artificial intelligence is a popular phrase possessing a wide range of definitions. Since the creation of the first computer, designers and users alike have been striving to develop "thinking machines" capable of far more than simply crunching numbers. Artificial neural networks, or ANNs, attempt to follow a biological paradigm to impart "intelligence" to a computer program. A biological neuron is a cell capable of basic computation in that it receives one or more inputs and based on the magnitude of the various inputs and the strength of their connections (synapses), the cell produces an output response. This output response can then be passed as an input to other neurons. The true power of these biological computers comes from the complex interaction of thousands of neurons in a massively parallel architecture.

ANNs are a class of machine learning algorithm capable of establishing relationships between a set of input and a desired output. In its simplest form, an ANN consists of a collection of interconnected nodes representing the neurons, a series of weights that represent the connection strength of input, and an activation function that determines when the weighted sum of inputs is sufficient to trigger an output response. The ANN learns how to map a given set of inputs to a known output value through an iterative training process where the network adjusts the internal weights to minimize output error. Once trained, the ANN provides a functional mapping between inputs and outputs and is then capable of providing output values when given new input values. ANNs represent a class of tool known as universal function approximators, which means they can approximate any function if they are given enough nodes (computing power) and sufficient training data.

Neural networks have been trained to perform a wide variety of tasks including credit checks, speech recognition, and stock market forecasting. We are currently applying ANNs as a highly adaptive nonlinear method for performing spatial interpolation of weather data. For example, many places around the world have long time-series of routine weather observations that could be useful in evaluating historic drought conditions. The spatial distribution of these observing stations is very irregular; typically, weather stations are highly concentrated near heavily populated areas but there are relatively few stations in remote forested areas. The key to examining spatial patterns using these scattered weather observations is the method of spatial interpolation. An ANN has been constructed to spatially interpolate routine daily weather observations using location (latitude and longitude), topography (slope, aspect and elevation), land cover type, and distance to water bodies as inputs for developing spatial interpolation functions that can produce gridded weather data sets at resolutions of 1 to 5 kilometers. We used ANN-derived temperatures to examine the spatial extent of a severe drought episode that occurred during 2003 in Europe. In addition to producing historical spatial weather fields, we are also investigating the application of ANNs to downscaling numerical weather prediction model forecasts. This technique may make it possible to derive a more detailed 1-kilometer resolution weather forecast from a 12-kilometer model output. If successful, this method will cut the time it takes to produce detailed weather information from computer-intensive meteorological models such as MM5. One application would be detailed smoke modeling for individual prescribed fires in near real-time.



Spatial extent of 2003 European drought derived from difference between 2003 and 2001 conditions. Red areas are those hardest hit by drought while green indicates little difference between 2003 and 2001.

• Congratulations to Howard Rosen, National Program Leader for Wood Chemistry, Pulp and Paper, on his retirement after 36 years with the Forest Service. Howard has been a valued supporter of the wood quality work in our unit and he will be missed.

• It is with sadness that we note the passing December 18 of Dr. Sue Ferguson, leader of the Atmosphere and Fire Interactions Research and Engineering team in Seattle, Washington. Sue was actively cooperating with our Smoke Management Team on adapting BlueSky/Rains to the Southeast.

• John Toliver, Deputy Station Director for the Rocky Mountain Research Station, is on a special assignment with the Southern Research Station (SRS) to lead and coordinate a hurricane aftermath science team. His role will be to work closely with regional, state, and local officials, as well as communities and universities in the affected areas. He will also serve as a liaison between the SRS and Forest Service Research & Development in the national headquarters. Initially, he will meet with stakeholders to determine ongoing activities and identify critical next steps. Recovery and restoration of the forests, wetlands and wildland-urban areas impacted by the hurricanes will be the team's focus, from both a short- and long-term perspective. Bryce Stokes was named the National Headquarters Liaison. Stokes will assist coordination with the other stations, and will ensure that lessons learned and protocols developed are incorporated into national protocols and processes for addressing research and development activities following storms and other disasters.

• The Forest Service added five scientists to the elite ranks of ST, the equivalent of a GS-16. The new five are: Dennis Lemly, SRS, Ken Cordell, SRS, Peter Bisson, PNW, Fred Swanson, PNW, Roger Rowell, FPL. They join five other ST scientists: Rajai Atalla, FPL, Dick DeGraaf, NE, Mel Tryee, NE, William Mattson, NC, and Richard Haynes, PNW. To attain the rank of ST, a scientist must be recommended by a panel of peers and approved by his or her station director, the normal panel process. The additional step for ST rank is to be approved by the Department of Agriculture, where the total number of ST positions in USDA is controlled.

• Hank Kashdan was named Deputy Chief for Business Operations.

• Ellen Bergfeld and Karl Glasener of the Agronomy/Crops/Soils Societies of America met with Jeff Armstrong, Dean of Michigan State University, to discuss the creation of a National Institute for Food, Agriculture, and Natural Resources, a proposed independent agency within USDA which would incorporate current elements of USDA's research, education, and extension activities. Land-grant universities have been strategizing to dramatically change federal R&D investments for agriculture, food, and natural resources. These concerns were further exacerbated by last year's OMB decision to eliminate half of the agriculture formula funds in the President's FY06 budget and replace them with competitive programs, which Congress overturned. Even before last year's OMB move, a proposal was floated for a new Institute in USDA, something akin to NSF or NIH, focused on fundamental research. Considerable planning has been ongoing at NASULGC to restructure federal R&D for agriculture. The most recent proposal coming out of NASULGC can be found at http://web1.msue.msu.edu/learnnet/thinktank.html. Although the original proposal aimed to keep applied USDA research largely intact (i.e., ARS, ERS, FS R&D, CSREES) while the Institute conducted long-term fundamental research, the latest proposal aims to merge all those efforts into a tripartite "institute"--intramural research & education, extramural research & education, and land-grant and related university programs.

• The National Association of Professional Forestry Schools and Colleges (NAPFSC) recently changed their name to the National Association of University Forest Resources Programs (NAUFRP). Their website url remains http://www.napfsc.org/ and their 1999 publication "The Role of Research, Education and Extension in Sustaining America's Forest Resources: Why You Should Care" can be downloaded there, as well as their 2005 Funding Request that advocated raising the FS R&D budget by $5 million that would have been committed to cooperative agreements, in order to eventually raise the level of FSR&D extramural funding to 20% of the FS R&D budget. Further, they recommended establishing an external competitive grant program in forest and natural resources research and advocated designating $10 million for this purpose, eventually building to $40 million.

• A report based on surveying over 3,300 information consumers in Australia, Canada, India, Singapore, the United Kingdom, and the United States was released by OCLC (Online Computer Library Center). The report, "Perceptions of Libraries and Information Resources" summarizes findings of an international study on information-seeking habits and preferences. Some of the findings were:

* Most respondents (84%) use search engines to begin an information search

* Quality and quantity of information are top determinants of a satisfactory electronic information search, not speed of results.

* Respondents do not trust purchased information more than free information.

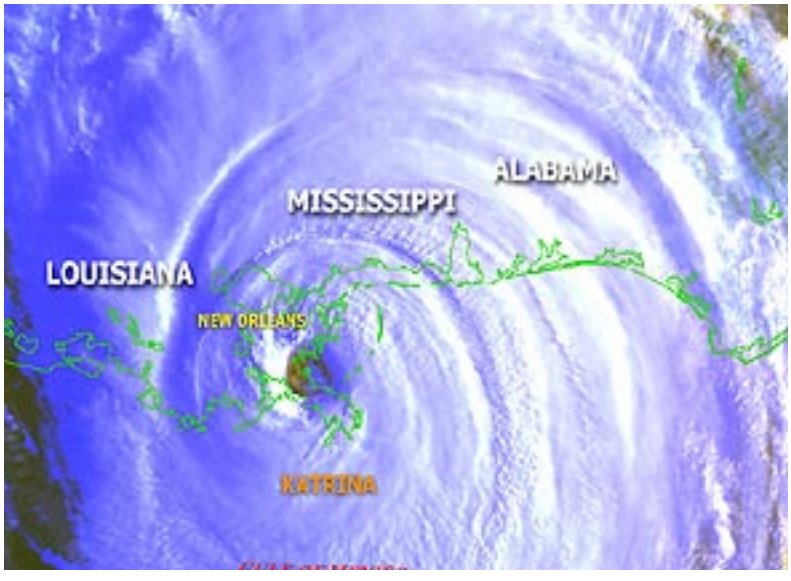
* Information consumers like to self-serve. They use personal knowledge and common sense to judge if electronic information is trustworthy, and they cross-reference other sites to validate their findings.

* The survey results show that library and information preferences and use are consistent among respondents in the six countries surveyed. The full report can be downloaded at Perceptions of Libraries and Information Resources.

• The Seattle Times Associated Press reported the arrest of six people on charges of eco-terrorism attacks in Washington and Oregon, including a $1.2 million arson at the Animal and Plant and Heath Inspection Services (APHIS) facility in Olympia, Washington in 1998. The arrests were made Wednesday in New York, Virginia, Oregon and Arizona. Other arsons included the destruction of a Bonneville Power Administration tower near Bend, Oregon on the eve of the millennium. In many of the fires the Animal Liberation Front (ALF) and Earth Liberation Front (ELF) claimed responsibility, according to the U. S. attorney's office.

• According to Inter Press Service, the world has suffered more than $200 billion in economic losses as a result of weather-related natural disasters over the past year, making 2005 the costliest year on record, according to preliminary estimates released by the Munich Re Foundation, which is part of Munich Re, one of the leading re-insurance companies. These damages

significantly exceeded the previous record of $145 billion set in 2004. Of the more than $200 billion in losses this year, more than $70 billion was covered by insurance companies, compared to some $45 billion in damages last year. Most losses resulted from hurricanes, particularly Wilma, which hit Mexico's Yucatan Peninsula; and Katrina, which overwhelmed New Orleans and other coastal areas in the U. S. states of Louisiana, Mississippi, and parts of Alabama. Wilma, the strongest-ever hurricane, according to records dating back to 1850, caused an estimated $15 billion in economic losses. Damages caused by Katrina, the sixth strongest hurricane on record, were significantly greater, however. Estimated losses come to more than $125 billion, of which only a little more than $30 billion was insured.

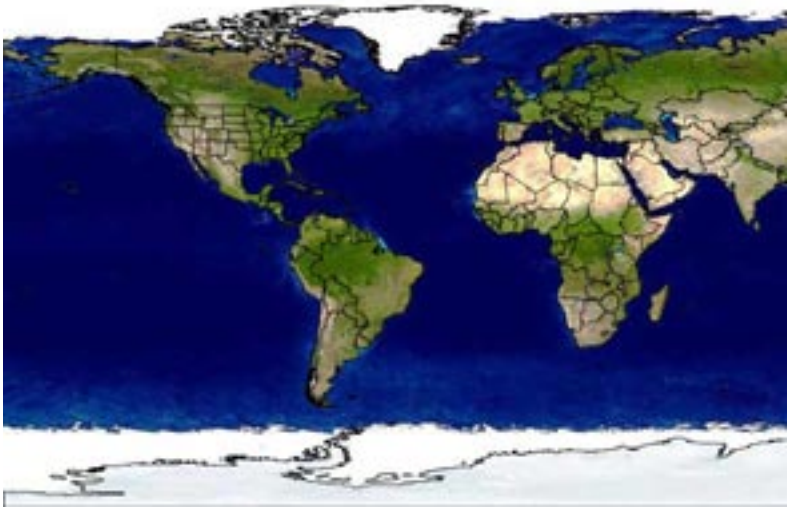


Satellite view of Hurricane Katrina off the Gulf Coast. Katrina caused the most costly natural diaster in U.S. history.

Eric Neiswanger (former employee) working hurricane Katrina damage in the Everglades. Great ride Eric..

• In related news, according to GreenBiz.com, 20 leading U. S. investors urged 30 of the largest publicly-held insurance companies in North America to disclose their financial exposure from climate change and steps they are taking to reduce those financial impacts. The investors, who collectively control more than $800 billion in assets, sent letters requesting that the climate risk reports be completed and shared with investors by August 2006. The reports should address the multiple types of risk and opportunity that insurers face in regard to climate change, including physical loss, legal and investment risks, as well as opportunities for new markets and products in a changing economic environment. According to a recent study by the Ceres investor coalition, U. S. insurers have seen a 15-fold increase in insured losses from catastrophic weather events in the past three decades -- increases that have far out-stripped growth in premiums, population and inflation over the same time period. The study, "Availability and Affordability of Insurance under Climate Change: A Growing Challenge for the U. S.", warns of larger financial losses in the years ahead if climate change trends continue and no actions are taken to face the challenge.

• The US Geological Survey (USGS) now offers, at no cost, selected Landsat 4, 5 and 7 satellite data. Orthorectified Landsat data are available for free download from the Global Visualization Viewer (GloVis) at http://glovis.usgs.gov and Earth Explorer at http://earthexplorer.usgs.gov. The Landsat Orthorectified data collection is a global set of high-quality, relatively cloud-free orthorectified Landsat 4-5 Thematic Mapper (TM) and Landsat 7 Enhanced Thematic Mapper Plus (ETM+) imagery. Selected and generated through NASA's Commercial Remote Sensing Program, the datasets provide two full sets of global coverage over an approximate 10-year interval (circa 1990 and circa 2000) and total nearly 16,000 scenes. Other data sets will be added as they become available, including the Landsat Orthorectified Multispectral Scanner (MSS) data set (circa 1975). Users can download an entire scene, containing all bands, metadata, jpeg and header information in a single zipped format file. For more information regarding Orthorectified data, please go tos.usgs.gov/products/satellite/landsat_ortho.html or contact USGS Customer Service, EROS, 800-252-4547 or custserv@usgs.gov.



By entering your Latitude and Longitude at Landsat you can obtain satellite data from US Geological Survey.

Publications

FY 2006 Publications (* denotes new publication this month)

Refereed Journals and Book Chapters

Jordan, L., Daniels, R.F., **Clark, A. III**, He, R. 2005. Multilevel nonlinear mixed-effects models for the modeling of earlywood and latewood microfibril angle. *Forest Science* 51(4): 357-371.

***Liu, Y.-Q.** 2005. Atmospheric response and feedback to radiative forcing from biomass burning in tropical South America. *Agricultural and Forest Meteorology.* 133, 40-53.

Liu, Y.-Q. 2005. Land breeze and thermals: A scale threshold to distinguish their effects. *Advances in Atmospheric Science*, Vol. 22, No. 6, 889-902

Liu, Y.-Q., Fu, R., Dickinson, R. 2005. Smoke aerosols altering South American monsoon. *Bulletin American Meteorological Society* 86(8): 1062-1063.

Liu, Y.-Q., Avissar, R. 2005. Modeling of the global water cycle - analytical models. In M. G. Anderson, Ed. *Encyclopedia of Hydrological Sciences*. John Wiley & Sons, pp. 3456.

Logan, S.R., **Edwards, M.B.**, Shiver, B.D. 2005. Survival and growth of seed trees 20 years after a natural regeneration cut in the Piedmont of Georgia. *Southern Journal of Applied Forestry* 29(4): 173-178.

Qu, J., Hao, X., Yang, R., Sommers, W., Dasgupta, S., Bhoi, S., Kafatos, M., **Liu, Y.-Q., Achtemeier, G**., Riebau, A.R., Coronado, P. 2005. Bridging Earth observations: remote sensing measurements, fire modeling, and air quality decision support system in the eastern United States. *Earth Observation Magazine* 14 (6).

Reitz, R. 2005. Forests and people: The symbiotic relationship. Pp. 89-93 *In* American Perspectives on the Wildland/Urban Interface. The National Wildland/Urban Interface Fire Program; 113 p.

Rhy, Soung-Ryoul, Chen, Jiquan, Crow, Thomas R., **Saunders, Sari.** C. 2004. Available fuel dynamics in nine contrasting forest ecosystems in North America. *Environmental Management* Vol. 33, Supplement 1, pp. 87–107.

Saunders, S.C., J. Chen, T.D. Drummer, E.J. Gustafson, and K.D. Brosofske. 2005. Identifying scales of pattern in ecological data: A comparison of lacunarity, spectral and wavelet analyses. *Ecological Complexity* 2: 87-105.

Schulte, Lisa A. and Mladenoff, David J. 2005. Severe wind and fire regimes in northern forests: Historical variability at the regional scale. *Ecology*, 86(2): 431–445.

Varner, J.M. III, Gordon, D.R., Putz, F.E., Hiers, J.K. 2005. Restoring fire to long unburned *Pinus palustris* ecosystems: Novel fire effects and consequences for long-unburned ecosystems. *Restoration Ecology* 13(3): 536-544. (Unit funded under agreement #02-1A-11330136-030; funding source Joint Fire Sciences Program)

Proceedings and Reports

Brockway, D.G., **Outcalt, K.W.**, Tomczak, D.J., Johnson, E.E. 2005. Restoration of longleaf ecosystems. USDA Forest Service Southern Research Station General Technical Report SRS-83, Asheville, NC; 34 pp.

***Cleland, David,** Crow, Thomas, Saunders, Sari, Maclean, Ann, Dickmann, Donald. 2005. Characterizing historic and contemporary fire regimes in the Lake States. Final Report to the Joint Fire Science Program. 81 pp.

Kennard, D, Fowler, C. T., Hubbard, W. and Rauscher, M. 2005. The Encyclopedia of Southern Fire Science. In: Kush, J.S., comp., *Longleaf Pine: Making Dollars and Sense*, Proceedings Fifth Longleaf Alliance Regional Conference, 2004 October 12-15, Hattiesburg, MS, Longleaf Alliance Report No. 8: 97-100. (SRS-4104-6009)

Liu, Y.-Q. 2005. Spatial relationships between SST and U.S. Wildfires, *Proceedings of the Sixth Fire and Forest Meteorology Symposium*, 25-27 October 2005, Canmore, AB, Canada, Paper 6.2, P1-6 (available in CD). http://ams.confex.com/ams/6FireJoint/techprogram/programexpanded_302.htm

Outcalt, K.W. 2005. Restoring structure and composition of longleaf pine ecosystems of the Gulf Coastal Plain. In: Kush, J.S., comp., *Longleaf Pine: Making Dollars and Sense,* Proceedings Fifth Longleaf Alliance Regional Conference, 2004 October 12-15, Hattiesburg, MS, Longleaf Alliance Report No. 8: 97-100. (SRS-4104-6009)

Outcalt, K.W. 2005. National Fire and Fire Surrogate Study, 7th Annual SMIC Meeting and Field Trip. October 2005. Solon Dixon Forestry and Education Center, Andalusia, AL [Report]

Outcalt, K.W. 2005. National Fire and Fire Surrogate Study, Fuels Treatment Workshop and Field Trip. October 2005. Solon Dixon Forestry and Education Center, Andalusia, AL [Report]

Schoenholtz, S.H., **Stanturf, J.A**., Allen, J.A., Schweitzer, C.J. 2005. Afforestation of agricultural lands in the Lower Mississippi Alluvial Valley: The state of our understanding. pp. 413-432. In L.H. Fredrickson, S.L. King, and R. M. Kaminski, eds. *Ecology and Management of Bottomland Hardwood Systems: The State of our Understanding.* University of Missouri-Columbia. Gaylord Memorial Laboratory Special Publication No. 10. Puxico, MO.

Other Publications

***Goodrick, S. Stanturf, J., Sullivan, F., Outcalt, P., Gillmore, G.,** McCracken, R., Mundy, E. 2005. Biennial Southern Silvicultural Research Conference Proceedings 1-12, 1980-2003. Archive and bibliography on CD-ROM.

Outcalt, K.W. 2005. Prescribed Burning Research in the Piedmont of Georgia. Demonstration Forest Project Hitchiti Experiment Forest, Jarrell, GA. [3-Panel Outdoor Display]

Outcalt, K.W. 2005. Prescribed Burning Research on the Hitchiti Experimental Forest. Demonstration Forest Project Hitchiti Experiment Forest, Jarrell, GA. [Information Card]

Outcalt, K.W. 2005. Long-term Dormant-Season Burning Study Located in the Palmetto/Gallberry Fuel Complex. Demonstration Forest Project Osecola National Forest, Olustee, FL. [Outdoor Display]

Outcalt, K.W. 2005. We can't keep fire out of these woods. We can only choose between prescribed burns or wildfire. Demonstration Forest Project Osecola National Forest, Olustee, FL. [Outdoor Display]

Outcalt, K.W. 2005. We can't keep fire out of these woods. We can only choose between prescribed burns or wildfire. Demonstration Forest Project Osecola National Forest, Olustee, FL. [Information Card]

Publications

Outcalt, K.W. 2005. Fire and Fire Surrogate Study in the Gulf Coastal Plain. October 2005 Solon Dixon Forestry and Education Center, Andalusia, AL [Bookmark]

Outcalt, K.W. 2005. Fire and Fire Surrogate Study in theSouthern Coastal Plain. October 2005 Myakka River State Park, Sarasota, FL [Bookmark]

Abstracts and Posters

Achtemeier, Gary L., and Luke Naeher. 2005. Measurements of ground-level PM2.5 concentrations downwind from Southern prescribed burns. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Poster]

Achtemeier, Gary L. 2005. On plume rise – matching Daysmoke with Briggs Equations for industrial stacks. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Abstract]

Alahari, N., Sublette, K., Jennings, E., Thoma, G., Wolf, D., Duncan, K., **Callaham, M. Jr.**, Todd, T. 2005. Earthworms as ecoengineers in the restoration of oil and brine impacted soils following remediation. International Petroleum Environmental Conference, November 2005, Houston, Texas [Abstract]

Callaham, M.A., Richter, D.D., Hofmockel, M. 2005 Long-term land use effects on soil invertebrate communities in Southern Piedmont soils. Ecological Society of America annual meeting, 8-11 August, Montréal, Canada [Poster]

Callaham, M.A., Jr., Stanturf, J.A., Boerner, R.E.J. 2005. Viewing ecosystem restoration through the glass of soil ecology: Making use of the illuminated ped. Symposium Honoring Dr. David C. Coleman, 28-29 October, Athens, Georgia [Poster]

***Callaham, M.A. Jr.**, Todd, T.C., Kitchen, D.J., Blair, J.M., Williams, M.A., Rice, C.W. 2005. Long-term studies on soils and soil biology in a Kansas tallgrass prairie: Stories that only time can tell. Invited symposium presentation at the Soil Science Society of America Annual Meeting, 6-10 November, Salt Lake City, Utah [Abstract]

Canfield, J.M., Linn, R, Cunningham, P., **Goodrick, S.L.** 2005. Modeling effects of atmospheric stability on wildfire behavior. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Abstract]

Cunningham, P**., Goodrick, S.L.** 2005. High-resolution numerical model simulations of fire plume dynamics. 2005. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27 Canmore, Alberta, Canada. Sponsored by the American Meteorologica,l Society [Poster**]**

DiCosty, Ralph J., Callaham Jr., Mac A., Stanturf. John A. 2005. Atmospheric deposition and re-emission of mercury estimated in a prescribed forest fire experiment in Florida, USA. Soil Science Society of American Annual Meeting, 6-10 November, Salt Lake City, Utah [Poster]

Goodrick, S.L. 2005. Building historical gridded weather data sets for fire program analysis. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Poster]

Goodrick, S.L., Cunningham, P. 2005. A mechanism for the formation of transverse horizontal vortices on wildland fires. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Abstract]

Goodrick, S.L., Hanley, D.E. 2005. Atmospheric teleconnections and wildfires in the southeastern United States. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Poster]

Hanley, D.E., Cunningham, P.**, Goodrick, S.L.** 2005. The interaction between a wildfire and a sea-breeze front. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Poster]

Linn, R.R., Canfield, J., Winterkamp, J., Cunningham, P., Colman, J., Edminster, C.**, Goodrick, S.L.** 2005. Numerical simulations of fires similar to those of the international crown fire modeling experiment. Sixth Symposium on Fire & Forest Meteorology and the 19th Interior West Fire Council Meeting, October 25-27, Canmore, Alberta, Canada. Sponsored by the American Meteorological Society [Abstract]

Liu, Y.-Q., G. Achtemeier and S. Goodrick. 2005. CMAQ-Daysmoke as a Smoke and Air Quality Management Technique: A Case Study of a Prescribed Burning in Georgia. In: Proceedings Sixth Fire and Forest Meteorology Symposium, October 25-27, Canmore, AB, Canada [Abstract]

Outcalt, K.W., Wade, D. 2005. Response of a mixed longleaf (*Pinus palustris*) and loblolly pine (*Pinus taeda*) community to long-term dormant season prescribed burning. Ecological Society of America annual meeting, 8-11 August, Montréal, Canada [Poster]

***Outcalt, K.W.** 2005. Frequency and season of prescription fires to reduce hazardous fuel loads on the lower Piedmont of Georgia. In: Proceedings of the Annual Joint Fire Science Program Principal Investigator Workshop, November 1, San Diego, California. [Poster]

Sanchez, Felipe, Coleman, M., Garten, C.T., Luxmoore, R., **Stanturf, J.A**., Wullschleger, S.D. 2005. Soil carbon, after three years, under short rotation woody crops grown under a range of nutrient and water availability. Soil Science Society of American Annual Meeting, 6-10 November, Salt Lake City, Utah [Abstract]

Stanturf, J.A., Burbridge, P.R., Gardiner, E.S., Perdue, J.H. 2005. Disturbance in the face of climate change: Incorporating disturbance into management of coastal forests. International Workshop on the Scale of Natural Disturbances from Tree to Stand; 29 September to 1 October, Palanga, Lithuania; Lithuanian Forest Research Institute, Kaunas, Lithuania. [Abstract]

Upcoming Events:

2006

Jan 24-25 "Fire and Fire Surrogate Treatments for Fuel Reduction in Eastern Hardwood Forests – A Workshop for Land Managers," Asheville, NC; contact Tom Waldrop

Jan 29-Feb 2 American Meteorological Society Annual Meeting, Atlanta, GA; http://www.ametsoc.org/meet/annual/

Jan 8-12 "Ecology in an Era of Globalization: Challenges and Opportunities for Environmental Scientists in the Americas," Merida, Yucatan, Mexico; www.esa.org/mexico

*Feb 6-7 4th Annual Gulf Forest Soils Conference, "Properties and Management of Mississippi River Alluvial and Loessal Soils," Battlefield Inn and Conference Center, Vicksburg, MS; contact Scott Roberts for information sroberts@cfr.msstate.edu

Feb 8-12 Pine Rockland Conference, Miami, FL & Marsh Harbour, Bahamas; Outcalt and O'Brien to attend

Feb 27-Mar 1 Central Hardwood Forest Conference, Knoxville, TN. http://fwf.ag.utk.edu/central/

Feb 28-Mar 2 North Carolina Wildland Fire Symposium, Greensboro, NC; http://www.ncfirewise.org

Mar 8-9 Wildland Fire 2006, Phoenix, Arizona; http://www.iafc.org/wildland

Mar 24-25 The Seventh Eastern Old-Growth Forest Conference, Little Rock, Arkansas; pre-registration will be required. http://www.srs.fs.usda. gov/4106/meetings/EOGC2006/EOGC2006.htm

March 27-30 "Fuels Management -- How to Measure Success" conference sponsored by the International Association of Wildland Fire (IAWF), Portland, OR; www.iawfonline.org

Mar 29-Apr 2 American Society Environmental History Annual Meeting, St. Paul, Minnesota; http://www.h-net.org/~environ/ASEH/conferences.html.

Apr 6-7 Southern Regional Conference on Forestry Technology Transfer and Science Delivery, San Antonio, Texas

Apr 8-12 International Conference on Hydrology and Management of Forested Wetlands, New Bern, North Carolina; http://www.asae.org/imis/meeting/forestcall.cfm

*Apr 19-21 17th Global Warming International Conference and Expo, Miami, Florida; http://globalwarming.net

May 21-24 Challenges in Coastal Hydrology and Water Quality, Baton Rouge, Louisiana; http://www.cee.lsu.edu/facultyStaff/Singh_Vejay/index.html

Jun 3-8 12th International Symposium on Society and Natural Resource Management, Vancouver, BC, Canada; http://www.issrm2006.rem.sfu.ca

Jun 5-9 Fourth International Poplar Symposium, "Meeting the Needs of a Growing World through Poplar and Willow Science: Combining Traditional and Novel Approaches in the Genomic Era," Nanjing, China, IUFRO Poplar and Willow Working Party 2.08.04; http://ips2006.njfu.edu.cn/

Jul 18-20 Advances in Threat Assessment and Their Application to Forest and Rangeland Management, Boulder, Colorado; http://www.forestencyclopedia.net/encyclopedia/threats

Jul 9-15 18th World Congress of Soil Science, in Philadelphia, PA http://www.18wcss.org

*Jun 26-28 AWRA 2006 Summer Specialty Conference, Adaptive Manage ment of Water Resources; Missoula, MT; http://www.awra.org/meetings/Montana2006/index.html

Aug 6-11 Eighth International Conference on Mercury as a Global Pollutant Madison, WI; http://www.mercury2006.org/ ; DiCosty to attend and present paper

*Aug 6-11 Ecological Society of America annual meeting, Memphis, TN; http://www.esa.org/memphis/

Aug 8-10 Forest and Water in a Changing Environment Beijing, China; Chinese Academy of Forestry, Beijing Forestry University and Southern Research Station.

Aug 22-25 5th European Conference on Ecological Restoration: "Land use changes in Europe as a challenge for restoration ecological, economical and ethical dimensions" University of Greifswald, Germany http://www.uni-greifswald.de/SER2006

*Aug 28-Sep 1 IEA Bioenergy Task 29, Task 31 and Task 39, International Workshop "Biofuels and Bioenergy: Challenges and Opportunities," University of British Columbia, Vancouver Canada; http://www.ieabioenergytask31.org/

Sep 25-28 2006 biennial meeting Short Rotation Woody Crops Operations Working Group, Red Lion Inn, Pasco, Washington; tentatively, joint meeting with Poplar Council of Canada, US Poplar Council, IUFRO Temperate Short Rotation Forestry Working Party 1.03.02, and SAF Agroforestry Working Group;

*Sep 25-27 UFRO Oak Silviculture Working Party (1.06) meeting, Stevens Point, WI; optional pre-conference field trip to SW WI on Sept 21-23, and optional post-conference tour to northern WI on Sept 28-30.

Sep 26-19 Patterns and Processes in Forest Landscapes; Consequences of Human Management, University of Bari, Italy; IUFRO 8.01.03 Landscape Ecology; http://www.greenlab.uniba.it/events/iufro2006/

*Oct 4-7 IUFRO and EFI International Meeting, "Ecosystem Goods and Services from Planted Forests," Bilbao, Spain; http://www.iefc.net

Oct 10-13 Conference on "Sustainable Forest Management with Fast Growing Plantations", Charleston, SC; contact Dave Wear dwear@fs.fed.us

Oct 25-29 Society American Foresters Annual Meeting, Pittsburgh, PA

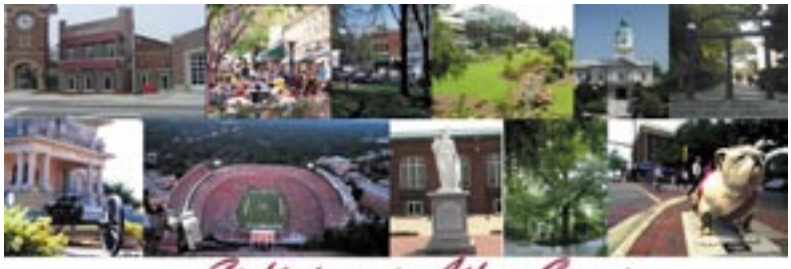
Oct 23-27 Knowledge management in forestry conference, sponsored by KnowForAlp, hosted by Forest Research Institute Baden Württemberg, Freiburg, Germany

Nov 12-16 Soil Science Society of American Annual Meeting, Indianapolis, IN; http://www.indy.org

Upcoming Events:

Nov 13-17 3rd International Fire Ecology and Management Congress, San Diego, CA; http://emmps.wsu.edu/firecongress/

14th Biennial Southern Silvicultural Research Conference to be held in Athens, GA



2007

Feb 26-Mar 1 14th Biennial Southern Silvicultural Research Conference, Athens, GA;

Summer 6th North American Forest Ecology Workshop, to be held in British Columbia

Oct 24-28 Society American Foresters Annual Meeting, Portland, OR.

Nov 4-8 Soil Science Society of American Annual Meeting, New Orleans, LA; http://www.neworleanscvb.com

2008

Nov 5-9 Society American Foresters Annual Meeting, Reno, NV.

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GPRA -Accomplishment

Category	FY 2004 Total	FY 2005 Total	FY 2006 To Date
Number of Refereed Journal Publications	20	21	12
Number of Non-Refereed Publications (include abstracts)	89	60	28
Number of Publications (refereed + non-refereed)	109	81	40
Number of Tours	41	40	17
Number of Short Courses/Training	20	13	7
Number of Invited Presentations to Scientific Organizations	12	7	10
Number of Invited Presentation to Lay Organizations	30	32	13
Volunteer Presentations to Scientific Organizations (non-GPRA	42	50	13
Number of Technology Transfer Activities (other than above)	105	132	48
Outside Funding	$2,610,574	$3,688,734	$1,754,000

SRS-4104 Project Leader's Report

John Stanturf - Editor Lynne Breland - Technical Writer
Patricia A. Outcalt - Production, Design and Layout

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